

Claims

1. An apparatus for detecting heat sealed places of plastic film means which is fed in a direction, said plastic film means including heat sealed portions formed at the heat sealed places, each of the heat sealed portions having a surface minutely rugged to constitute a pattern such as a mesh, said apparatus comprising:

light source means opposed to said plastic film means;

an optical sensor opposed to said plastic film means; and

a cover plate disposed between said optical sensor and said plastic film means, said cover plate including small hole or narrow slit means through which light passes, said light source means emitting light which reflects from or permeates through said plastic film means and then passes through said small hole or narrow slit means to be directed to said optical sensor, said optical sensor image recognizing the reflecting or permeating light and reading out the minutely rugged surface of heat sealed-portion to detect the heat sealed place of plastic film means in accordance with a variation of image.

2. The apparatus as set forth in claim 1 wherein said light source means comprises a plurality of light sources spaced from each other and opposed to said plastic film means.

3. The apparatus as set forth in claim 2 wherein said light sources are spaced from each other in directions parallel and perpendicular to the direction in which said plastic film means is fed.

4. The apparatus as set forth in any one of claims 1 to 3

wherein said small hole or narrow slit means comprises a plurality of small holes or narrow slits formed in said cover plate to be spaced from each other.

5. The apparatus as set forth in claim 4 wherein said small holes or narrow slits are spaced from each other in directions parallel and perpendicular to the direction in which said plastic film means is fed.

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6. The apparatus as set forth in any one of claims 1 to 5 wherein said plastic film means is fed longitudinally thereof and intermittently, said plastic film means being heat sealed widthwise thereof whenever intermittently fed, said optical sensor then detecting the heat sealed place of plastic film means whenever said plastic film means is intermittently fed, a cutter being disposed at a position and moved by position adjustment means to adjust the position of edge of cutter in a direction parallel to the direction in which said plastic film means is fed, in response to a detecting signal transmitted from said optical sensor so that said plastic film means can be cut along a line predetermined at or near the heat sealed portion thereof by said cutter.

7. The apparatus as set forth in any one of claims 1 to 5 wherein said plastic film means is fed longitudinally thereof and intermittently for a length, said plastic film means being heat sealed widthwise thereof by seal bar means disposed at a position whenever said plastic film means is intermittently fed, said optical sensor then detecting the heat sealed place of plastic film means whenever said

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plastic film means is intermittently fed, to adjust the feed length of plastic film means or the position of heat seal bar means in response to a detecting signal transmitted from said optical sensor so that said plastic film means can be cut along a line predetermined at or near the heat sealed portion thereof by a cutter.

8. The apparatus as set forth in any one of claims 1 to 5 wherein standing pouches are made from said plastic film means, each of the standing pouches comprising rectangular panel materials which are superposed into two layers to have bottom and opposite side edges, a bottom material being folded into halves, superposed into two layers and interposed between the layers of panel material at the bottom edges thereof, one of said layers of panel material being bottom sealed with one of said layers of bottom material to include a bottom sealed portion formed along the bottom edge of panel material, the other layer of panel material being bottom sealed with the other layer of bottom material to include a bottom sealed portion formed along the bottom edge of panel material, said layers of panel material being cross sealed with each other to include cross sealed portions formed along the opposite side edges of panel material, each of the bottom and cross sealed portions having the minutely rugged surface, said optical sensor reading out the minutely rugged surfaces of bottom and cross sealed portions to judge whether the relation in place between the bottom and cross sealed portions is good or no good, whenever said panel and bottom materials are fed widthwise of the standing pouches and intermittently after being bottom and cross sealed in a standing pouch making process.

9. The apparatus as set forth in claim 8 wherein each of said

bottom sealed portions includes unsealed portions formed therein, each of said unsealed portions having a surface which is not or barely minutely rugged, said optical sensor judging whether the relation in place between the bottom and cross sealed portions is good or no good, in accordance with the place of unsealed portion.

10. The apparatus as set forth in claim 8 wherein each of said bottom sealed portions has a bowl-shaped upper edge, said optical sensor judging whether the relation in place between the bottom and cross sealed portions is good or no good, in accordance with the place of bowl-shaped upper edge.

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11. The apparatus as set forth in any one of claims 8 to 10 wherein punch holes are formed in said bottom material at intersections between the bottom and cross sealed portions, said layers of panel material being partially sealed with each other at the places of punch holes, said punch holes protruding from the cross sealed portions to have protruding portions formed on the opposite sides of the cross sealed portions, each of the protruding portions having a surface which is not or barely minutely rugged, said optical sensor judging whether the relation in place between the punch holes and the bottom and cross sealed portions is good or no good, in accordance with the place of protruding portion.

12. The apparatus as set forth in any one of claims 8 to 11 wherein said cross sealed portions have center lines along which notches are formed into the cross sealed portions from the bottom edges of panel material, said optical sensor judging whether the relation in

place between the notches and the bottom and cross sealed portions is good or no good.

13. The apparatus as set forth in any one of claims 1 to 5 wherein standing pouches are made from said plastic film means, each of the standing pouches comprising rectangular panel materials which are superposed into two layers to have bottom and opposite side edges, a bottom material being folded into halves, superposed into two layers and interposed between the layers of panel material at the bottom edges thereof, one of said layers of panel material being bottom sealed with one of said layers of bottom material to include a bottom sealed portion formed along the bottom edge of panel material, the other layer of panel material being bottom sealed with the other layer of bottom material to include a bottom sealed portion formed along the bottom edge of panel material, said layers of panel material being cross sealed with each other to include cross sealed portions formed along the opposite side edges of panel material, each of the bottom and cross sealed portions having the minutely rugged surface, said optical sensor reading out the minutely rugged surfaces of bottom and cross sealed portions to judge whether the relation in place between the bottom and cross sealed portions is good or no good, when said standing pouches are fed widthwise thereof after being made.

14. The apparatus as set forth in claim 13 wherein each of said bottom sealed portions includes an unsealed portion formed therein, said unsealed portion having a surface which is not or barely minutely rugged, said optical sensor judging whether the relation in place between the bottom and cross sealed portions is good or no good, in

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accordance with the place of unsealed portion.

15. The apparatus as set forth in claim 13 wherein each of said bottom sealed portions has a bowl-shaped upper edge, said optical sensor judging whether the relation in place between the bottom and cross sealed portions is good or no good, in accordance with the place of bowl-shaped upper edge.

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16. The apparatus as set forth in any one of claims 13 to 15 wherein punch holes are formed in said bottom material at intersections between the bottom and cross sealed portions, said layers of panel material being partially sealed with each other at the places of punch holes, said punch holes protruding from the cross sealed portions to have protruding portions formed on the opposite sides of the cross sealed portions, each of the protruding portions having a surface which is not or barely minutely rugged, said optical sensor judging whether the relation in place between the punch holes and the bottom and cross sealed portions is good or no good, in accordance with the place of protruding portion.

17. The apparatus as set forth in any one of claims 13 to 16 wherein each of said standing pouches are corner cut at corners between the bottom and opposite side edges thereof to give an appearance, said optical sensor judging whether the appearance of corner cutting is good or no good.

18. The apparatus as set forth in any one of claims 1 to 5 wherein standing pouches are made from said plastic film means, each of

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the standing pouches comprising rectangular panel materials which are superposed into two layers to have bottom and opposite side edges. a bottom material being folded into halves, superposed into two layers and interposed between the layers of panel material at the bottom edges thereof, one of said layers of panel material being bottom sealed with one of said layers of bottom material to include a bottom sealed portion formed along the bottom edge of panel material, the other layer of panel material being bottom sealed with the other layer of bottom material to include a bottom sealed portion formed along the bottom edge of panel material, said layers of panel material being cross sealed with each other to include cross sealed portions formed along the opposite side edges of panel material, each of the bottom and cross sealed portions having the minutely rugged surface, said optical sensor reading out the minutely rugged surfaces of cross sealed portions to judge whether the sealed width of cross sealed portion is good or no good. when said standing pouches are fed widthwise thereof after being made.

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